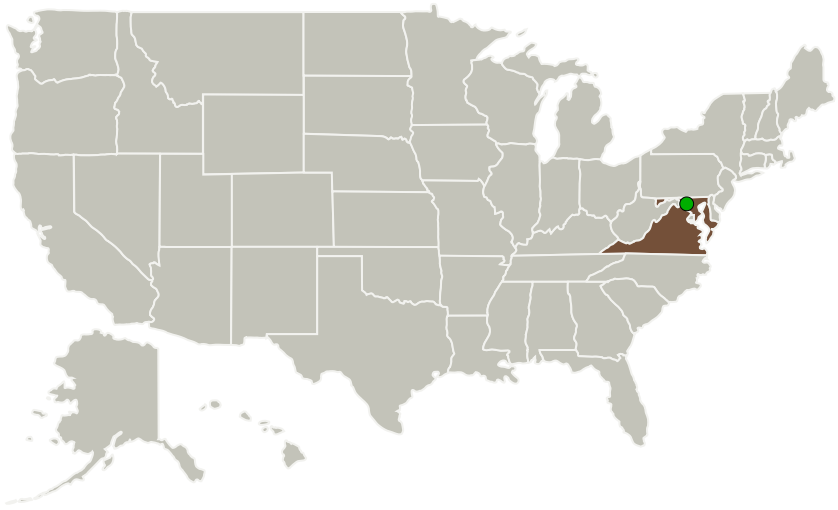
Coherent Laser Radar Metrology System for Large Scale Optical Systems, Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

A new type of laser radar metrology inspection system is proposed that incorporates a novel, dual laser coherent detection scheme capable of eliminating both environmental and scanner based Doppler ranging error. Measurement of large telescope structures and optics requires both high accuracy and non-contact technology. Due to the non-contact, stand-off nature of this technology, this system can measure optics and provide nearly real-time feedback to figuring/polishing instruments without removing the part from the spindle or other optical grinding or polishing setup. For advanced levels of integration and test, the proposed large-volume metrology technology would allow fast, non-contact measurement of mirror rigid body alignment and prescription (i.e., radius, conic, aperture), with no special targets or references on the optic. This would allow these mirror parameters to be measured with respect to other optics, instruments, or mechanical- and spacecraft-related structures.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Pyxisvision Incorporated	Lead Organization	Industry	Bristow, Virginia
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

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Primary U.S. Work Locations	
Maryland	Virginia

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140019)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Pyxisvision Incorporated

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Anthony R Slotwinski

Co-Investigator:

Anthony Slotwinski

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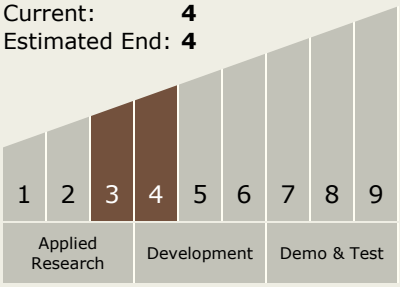
Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.2 Observatories
    - TX08.2.3 Distributed Aperture

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System